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NOTES ABOUT THE AUTHORS

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Mr. Sharp, vice president of the First National Bank in St. Louis, has been in charge of the bank's Foreign Department since January, 1943. Born in Fulton, Missouri, he was educated at Westminster College there and began his banking career as a bookkeeper with the Texas Bank and Trust Company in Beaumont, Texas.

Mr. Sharp has been active in committee work with the Foreign Trade Division of the St. Louis Chamber of Commerce and has also served on the executive committees of the Bankers' Association for Foreign Trade, the World Trade Club of St. Louis, the St. Louis Council on World Affairs and the St. Louis Association of Credit Management. At present, he is chairman of the St. Louis Regional Export Expansion Committee of the United States Department of Commerce.

He is the author of a number of articles on the subject of foreign trade financing and has appeared on various panels as a discussion leader at international banking sessions. Married and the father of three children, Mr. Sharp resides with his wife in Richmond Heights.

THOMAS C. DUNDON

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He is a graduate of the University of Missouri, School of B & PA. In 1954, Mr. Dundon took a leave of absence from the Division of Health to attend the School of Public Health, University of Minnesota and obtained a Master's degree in public health statistics. He has taken additional courses in demography in the Department of Rural Sociology, University of Missouri, and is using many demographic techniques in his work at the Division of Health.

STANLEY LEBERGOTT

Mr. Lebergott was graduated from the University of Michigan and has worked in Washington since 1948 in the Division of Statistical Standards, Bureau of the Budget.

His assignments have included collaboration with other Federal Agencies for improvement of statistical methods relating to National Income, Income Distribution, and Current Economic Indicators.

Mr. Lebergott received the Rockefeller Public Service Award in 1958. He has published articles on national income, employment in *American Economic Review, Review of Economics and Statistics, Journal of the American Statistical Association, Harpers,* etc. In 1960 publications included: "Wage Trends, 1800-1900" in *Trends in the American Economy* in the Nineteenth Century; "Population and Labor Force" in *Demographic and Economic Change in Developed Countries.*

CHARLES E. SHANKS

Mr. Shanks was graduated from the University of Missouri in 1941, and following three and one-half years service in the Air Force, completed requirements for a Master's degree in field zoology in 1947. His career began with the Missouri Conservation Commission as a research biologist in 1947 and he now is serving in the capacity of Superintendent of Game.

The present assignment encompasses administration of the Commission's game program throughout the State. He has contributed articles to the *American Mid-Land Naturalist,* the *Journal of Wildlife Management* and the *Missouri Conservationist,* and special bulletins for the Missouri Conservation Commission.

United States Trade Expansion Program

JAMES L. SHARP, *Vice President*
First National Bank in St. Louis

After World War II, the United States was the only large industrial nation whose plant and equipment had come through the war relatively unscathed. Because of this and the dynamism of our free enterprise system, it seemed perfectly natural for our country to take on a large part of the burden of rehabilitation of the war-ravaged nations and a large share of military expenditures necessary for mutual security.

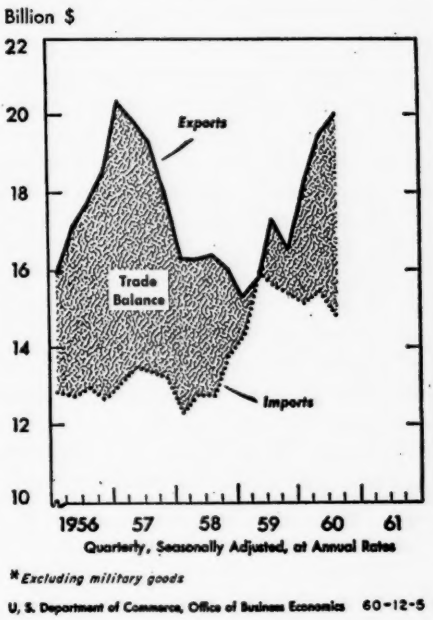
The nation supported President Truman when he announced the Marshall Plan which became effective in 1948 and which was supposed to be terminated within four or five years. Much of its purpose was accomplished during that period. Meanwhile, the needs developed in other parts of the world. Since we had created the image in many places of being the country most able to assist financially, all paths led to the U.S.A. While the American public has supported these large outlays—and no doubt still wishes to carry its fair share of the burden—two things have happened that call for a shift of emphasis.

First, we have built up our dollar outlays to a volume that we can no longer afford;

Second, many of the war-torn economies have been restored to a high state of prosperity.

Consequently, our fair share of the military and economic assistance program is quite

EXPANSION IN U.S. TRADE SURPLUS*
Third Quarter Merchandise Exports Exceed Imports by $5 Billion at Annual Rate



**Excluding military goods*

U. S. Department of Commerce, Office of Business Economics 60-12-5

different today from what it was a few years ago.

BALANCE OF PAYMENTS

Our country's expenditures abroad for goods, services, economic aid and investments continue to exceed income from abroad by a substantial amount. In almost every year since the Korean War, our balance of payments has been unfavorable. Obviously this cannot go on forever. It seems clear that we are going to have to find ways of bringing our dollar outlays more in line with our dollar income.

We must keep our exports as competitive as possible and expand them to the greatest possible extent. Such an expansion program will add greatly to the more than 4.5 million jobs already generated by our export trade. It will contribute to our capacity to maintain expenditures abroad for investment, travel, maintenance of United States military forces, and programs of foreign economic cooperation.

A national plan to promote an increase in the volume of U. S. exports was announced last Spring by the President in a special message to the Congress. The message outlined a series of coordinated measures to improve and expand government services to private industry in the development of world trade and to enlist increasing cooperation between government and business in finding new markets overseas. The program was the result of several months of intensive study and survey of trade problems and attractive overseas sales opportunities. Reports and suggestions were received from authorities on trade and from government officials at home and abroad.

A cross-section of the United States business community was consulted and a compact group of business leaders was organized to plan and promote an export drive by business. The Secretary of Commerce, in cooperation with other department heads, announced the appointment of a National Export Expansion Committee, a top business group headed by Leonard F. McCollum, President of the Continental Oil Company of Houston. In addition to Chairman McCollum, members of the committee are: Vice Chairman Morehead Patterson, New York, N. Y., chairman of the American Machine and Foundry Co.; Rudolph F. Bannow, Bridgeport, Conn., president of the National Association of Manufacturers; Donald K. David, Osterville, Mass., vice chairman of the Ford Foundation; and Arthur H. Motley, Larchmont, N. Y., president of the Chamber of Commerce of the United States. Similar regional committtees were appointed in each of the 33 field office territories of the Department.[1]

REGIONAL COMMITTEES

The objective was to cause more business men to enter export trade and to bring to the attention of all potential exporters the opportunities now available for expanded overseas sales. The St. Louis Regional Committee is, I believe, typical of the other 32 across the nation. It is made up of a Chairman, Executive Secretary and eight members chosen from industry and civic groups. It is well aware of our need to increase sales of United States products in foreign markets and realizes that a rising volume of exports is essential to the economic health of our country.

Among suggested functions, the Regional Committee will undertake to:

1. Enlist the support of business organizations and individual businessmen in alterting the business community to the new opportunities provided by growing

[1] U. S. Department of Commerce, Washington, D. C., **Foreign Commerce Weekly,** December 26, 1960, reported the first annual joint meeting of the National and Regional Export Expansion Committee in New York, with the Secretary of Commerce and other officials interested in Foreign Trade.

interest abroad in American products and overseas prosperity.

2. Emphasize the exploitation of trade opportunities and effect specific use of these opportunities through secondary dissemination by business organizations.
3. Stimulate increased activities by industry and trade associations for dissemination and secondary distribution of all data useful to their members to pinpoint entry in export trade.
4. Stimulate the establishment of regular meetings for business firms interested in export trade, support existing and establish new foreign trade clubs under the sponsorship of local businesses and provide support to nourish any organizations which are created by these efforts. Participate actively in these meetings as speakers, panelists, etc.
5. Determine the needs of business for information and services necessary to achieve an expansion of U. S. exports.
6. Encourage business organizations to discuss export potentials for their industry or area.

Since its inception, the National Export Expansion Program has gained considerable momentum. The export drive is not simply a temporary measure but is a sustained, well-organized and permanent activity closely identified with the balance-of-payment problem. Reduction of the U. S. international balance-of-payments deficit, currently down to about $3 billion annually is a major objective of government economic policy and the drive to accelerate exports is the most promising available means for accomplishing it.

FOREIGN MARKET EXPLORATION

Many firms across the nation that were depending almost entirely on domestic markets are now expanding their business by export selling. This is not restricted to large companies; it applies to many small and medium-sized concerns with good management and engineering and market-tested products.

No company with exportable products can claim to have fully explored its market potential and its chances of future growth until it has carefully investigated its possibilities in world markets. This market study should be initiated by top executive personnel and boards of directors. With top management support, such an effort will have the necessary continuity to explore fully the company's position in the international business field and make exporting a part of the plans for long-range expansion. By such enterprise, firms can achieve some measure of diversification and improve their growth patterns and competitive position. We, therefore, suggest that firms consider: (a) that world trade is expanding; (b) that many exchange controls and trade restrictions have been dropped as the European nations have become more prosperous, and (c) that American products enjoy favor in world markets and compete successfully with the best products of the major industrial and trading nations.

There are many other reasons for increasing our volume of export business. Our industrialization equips us to meet competition in world markets. We have industrial management of a high order; a large pool of technical personnel in science, engineering and technology experienced in such major fields as aircraft, industrial and scientific instruments, the highly diversified field of electronics, nuclear energy equipment, chemicals, plastics and rubber. America's foremost position in research and development in aerospace industries is evidence of the ability to create products competitive with major industrial areas of the world. In agriculture, as in manufacturing, we enjoy the competitive advantages of capable management, the most advanced technology and highly efficient equipment.

Banking services are being extended, providing export firms—particularly the new firms—with helpful advice and assistance in financing their shipments and making collections. There are also freight forwarding companies to solve tedious problems of documentation, provide export packing and otherwise relieve executives of burdensome details. Management can devote full time to the solution of major problems of export selling.

MIDWEST FOREIGN TRADE

In its day-to-day contacts, the St. Louis Regional Export Expansion Committee is finding that the Midwest is definitely foreign trade conscious. Our manufacturers are coming to the realization that this trade is important to their prosperity and well-being. Our greatly expanded industrial and agricultural facilities must have foreign markets to maintain satisfactory levels of production and employment. The Midwest is playing an important role in international trade. While there are no accurate statistics, since most exports are cleared through seaports, it can be safely estimated that between 35 per cent and 40 per cent of the country's foreign business originates in the central states.

This huge business is an important factor in the economic life of the Midwest. It provides employment in factories, railroad, banks, insurance offices, forwarding agencies and other establishments. It has a stimulating effect on the entire business of this region and it will have a stabilizing effect on many industries when domestic demands diminish and our own markets will not absorb the increased production.

This central region is dominant in the export of all types of heavy machinery and machine tools, farm machinery and implements, automobiles and automotive products, electric appliances, scientific apparatus, office machines and motion picture equipment. It is also the chemical center of the United States. The greater part of meat and other packing house products, chewing gum, breakfast cereals and pharmaceuticals of all kinds come from this area.

It is estimated that more than 300 manufacturing concerns in the metropolitan area of St. Louis alone engage in foreign trade. However, many manufacturers of products suitable for foreign markets have not given enough attention to overseas business and it is this group that the Expansion Committee is endeavoring to reach. A decline in domestic demands will undoubtedly make many think of new outlets. Those who now lay the foundation for foreign trade will have a decided advantage.

PROBLEMS IN EXPORTING

All those engaged in trade promotion are well aware of the problems and difficulties in connection with the program. The European Common Market, the European Free Trade Area and other strongholds of vigorous individual enterprise are threatening our American markets. History through the centuries shows that many nations have taken their turn in dominating world commerce and each has finally given way to a stronger competitor. As the leader for the last thirty years, we have much in common with our predecessors, but we have one important advantage. They were essentially trading nations whose economic growth was limited by the amount of goods they could produce. The United States is a producing nation; our problem is to sell all we can produce. In other words, we must become the first great producing and marketing nation.

Probably the most ominous threat is the Soviet Union. In 1957, Nikita Khrushchev stated bluntly: "We declare war. We will win over the United States. The threat to the U. S. is not the ICBM but in the field of peaceful production. We are relentless in

this and will prove the superiority of our system."

Hand in hand with the Soviet production drive is their marketing drive. Again, Mr. Khrushchev said: "We value trade least for economic reasons and most for political purposes."

The Soviet's trade effort may not seem very large when compared to the total world movement of goods, but this competition is likely to grow. Our best hope is to demonstrate to the nations of the free world that our economic system can do the most to improve the living scale of the most people.

Another problem, as America continues to keep its lead position to world trade, is the question of high wage rates. The average hourly wage rate in the European Common Market and the so-called Outer Seven, or European Free Trade Association, is only 30 per cent of the United States' average. In Japan this figure drops to only 12 per cent. However, foreign wage rates, especially in Europe, appear to be going up but, obviously, it will be a long time before these foreign rates catch up with ours. Tariff action is not the solution. If we shut out imports, we are going to shut in our own exports, for the world no longer depends upon our products as much as it did a few years ago.

American manufacturers still hold some high cards, however. These are their knowledge of mass marketing techniques, their management ability, and the tremendous sums of money they have poured into applied research and development in recent years.

Foreign manufacturers will not learn over night what it is to sell mass markets. Nor will they soon gain the talent to manage high-producion enterprises with maximum efficiency. And the U. S. technological lead will continue to produce export sales despite increased competition in some lines of production.

CONCLUSIONS

All in all, doing business abroad is good business when handled properly. We would not be likely to go into an extended sales campaign *domestically* unless satisfied with all phases of the business and, once established in a particular section of the United States, would do everything possible to stay there if the business was profitable.

Exactly the same holds true in international commerce. Once having decided to export, we should be prepared to stay in it and not pull out just because there may be some storm clouds in the offing. Experienced sailors know how to ride out a storm. So do experienced world traders, whose losses over the years have been far below those on sales within the U. S.

One final word: Take your bank into your confidence as you plan export expansion.[2] Your bank will do whatever it can to help you in your dealings abroad.

[2] The 33 field offices of the U. S. Department of Commerce have International Trade Specialists. Locations convenient to Missouri readers are 910 New Federal Building, St. Louis 1, and Room 2011, 911 Walnut St., Kansas City 6.

A Method for Estimating the Population of Missouri Counties*

THOMAS C. DUNDON
Director of Statistical Services
Missouri Division of Health

In the year of the decennial census, general interest is aroused as to the number, distribution, and characteristics of the population. Problems of demographic interest, such as migration, the changing birth rate, and aging of the population, have become topics of everyday conversation. It is difficult for some to visualize how population in an area can remain unchanged, or even decline when there appears to be obvious evidence of growth, such as a building boom. Building expansion is one of many factors which can lead to over-optimism concerning the number of persons living in an area. It has become necessary for those responsible for public policy or private decision to be informed concerning the growth or decline of population and the related changes in its characteristics.

In this age of mass movement, a characteristic of a free society undergoing technical changes, the need for current population data has become more demanding than can be supplied by a decennial census. The cost of the national decennial census is estimated at more than $100,000,000. At present, Congress is contemplating the introduction of a bill which provides for taking of a census every five years.

There is argument in support of this expenditure; however, so far Congress has not seen fit to support such an undertaking. For this reason, demographers have interested themselves in techniques of intercensal estimates to furnish characteristics of the population without actually taking a census. Those techniques which relate to the total number of persons in a particular area are usually of the following three types.

Projection—an estimation of the population at a particular time in the future.

Interpolation—a figure for the population at some time during the past, usually between two census years.

Current Estimating—the process of determining the population at a particular time from known facts relating to that area.

*Method used by the Missouri Division of Health. This estimating procedure was devised under the direction of Dr. Robert L. McNamara, Professor of Rural Sociology, while Mr. Dundon was a graduate student at the University of Missouri.

CURRENT ESTIMATING PROCEDURE

This paper will concern itself with current county[1] estimating. Although this type of estimating does not involve the problems of population projecting, it is a problem for which no one method has been adopted as best.

Population Estimates for Counties and Principal Cities have many uses

They are used by—
Retailers
Newspapers
Federal, State, and
Local Governments
Churches
Chambers of Commerce;
and other groups whose future plans are related to population change.

There are many innovations being used to estimate population. Some of these methods make use of building permits, telephone installations, and gas and water connections. Although all have some practical application, most methods are subject to immeasurable economic, social, and cultural variability, such as shifts in cooking habits between gas to electricity, or the installation of two phones for a family. Because of these changes, it is often hard to establish base rates at the census year which are applicable to intercensal years.

The three basic elements making up population change are the number of births, which increase the population; the number of deaths, which decreases the population; and the amount of migration, which might increase or decrease the population. Because two of the factors determining the number of persons living in an area; namely, the number of births and deaths of residents, can be found in public records, offices of vital statistics are often expected to furnish some type of population data. Data are needed not only by the public, but also to reflect health characteristics in a state or local area. For these reasons, vital statistics offices are a prime source of information and are concerned with the computation of population estimates.

Since population estimating can bring about important "side effects," such as over-expansion, tax benefits, etc., in localities, the Missouri Division of Health felt that it should try to determine the best estimating procedure to fit its own needs and to provide desired public information. The procedure discussed here was developed with the following points in mind: availability of data; the ability of the Division to control the quality of data going into the estimate; simplicity; cost; and the possibility of continuous estimating with little technical supervision.

Presumedly the method here presented meets these criteria. Lacking previous experience with the applicability of this method in Missouri, it was felt that an average county error of 10 per cent would be acceptable. The 10 per cent error proved to be over-pessimistic, for upon applying the method a state total error of 1.7 per cent was achieved with an average county error, disregarding signs of 5.2 per cent. This compares quite favorably with a study by Siegel, Shryrock, and Greenberg in which deviation comparisons of seven different methods were made. The authors report the seven methods yielded state total average deviations ranging from 3.47 to 6.39 per cent; whereas, upon comparing 92 cities of 100,000 population or over, an

[1] The Division plans to have estimates available for cities over 30,000 population starting in 1961.

average deviation was reached which ranged from 4.93 to 9.60 per cent.[2]

At the present time, several estimating procedures are being used in which vital rates are the major components. The method selected for Missouri is known as the Bogne-Duncan or composite method.[3] The Missouri procedure has been designed to meet the usual demands made of the Division of Health of Missouri. It has been modified somewhat from the original. The basic reason for applying the procedure was to obtain total population estimates. However, because of the age, sex, and color requirement necessary for a greater degree of accuracy, a by-product is an estimate of the population in broad age groups by sex and color. It will not be possible to determine the amount of internal variability in regard to age, sex, and color until the 1960 census has been published in detail. Therefore, estimates will not be published at this time. However, the total county counts as determined by the procedure have been compared with the final census reports, and it appears that the procedure is satisfactory for estimating total county populations.

TWO ASSUMPTIONS REQUIRED

The basic assumptions in the Bogue-Duncan method are: If one can determine the vital rates along with the number of vital events that have occurred in that area, he may then determine the population that was necessary to generate that number of vital events. The vital rates necessary to estimate population for a county are: birth rate, death rate, fertility rate, and sex ratio.[4] It is possible during the census year to compute these rates for county, state and nation. It is also possible nationally, because of the migration restrictions and the national collection of vital statistics data, to obtain an estimate of the population of the United States for intercensal years. The national population and vital statistics data are published annually;[5] and from these data, it is possible to determine the intercensal vital rates which are used in the Bogue-Duncan method.

The second assumption in the method is: The vital rates operating in a county will change between two periods of time in proportion and in the same direction as the

[2] Jacob S. Siegel, Shryrock, and Greenberg, "Accuracy of Postcensal Estimates of Population for States and Cities," **American Sociological Review,** Volume 19, No. 4, August 1954, pp. 440-444.

[3] A detailed description may be found in the publication, "A Composite Method for Estimating Postcensal Population of Small Areas by Age, Sex, and Color," Vital Statistics—Special Reports, Selected Studies, Volume 47, No. 6; United States Public Health Service, August 24, 1959.

[4] Age Specific Birth Rate $= \frac{\text{Number of Births to Females (20-44)}}{\text{Females (20-44)}} \times 1000$

Sex Ratio $= \frac{\text{Number of Males (20-44)}}{\text{Number of Females (20-44)}} \times 100$

Age Specific Death Rate $= \frac{\text{Number of Deaths to Persons (45-64)}}{\text{Population (45-64)}} \times 1000$

Fertility Rate $= \frac{\text{Number of Children (1-5)}}{\text{Females (20-44)}} \times 1000$

[5] United States Deaths, 1949 through 1951—"Deaths from 255 Selected Causes by Age, Race, and Sex, United States, 1959," **Vital Statistics of the United States,** 1950, Volume 3, United States Public Health Service, 1953, Page 76.

1950 United States Population—"Estimates of the Total Population Residing in Continental United States (Excluding the Armed Forces Overseas), by Age, Color, and Sex, July 1, 1956-1958, With Comparative Figures for April 1, 1950," Current Population Reports, Population Estimates, Series P 25, No. 1953, Bureau of the Census, February 11, 1959.

national vital rates. This rather general assumption is true only if population characteristics remain proportional. However, results obtained by the Missouri procedure for 1959 bear out the applicability of the procedure.

COMPUTATION OF AGE-SEX GROUPS

No attempt will be made in this paper to give a detailed description of the mathematical procedure used. Such description has been published and is available from the United States Public Health Service.[6]

After the county rates were adjusted from the 1950 level to the 1959 level, the following estimates were made:

(1) Female population 20 through 44 by using as the estimator the number of births occurring in this age group.
(2) Male population 20 through 44 by applying the sex ratio and using as the estimator the number of women 20 through 44 from (1).
(3) Number of persons 45 through 64 by applying the death rate, and using as an estimator the number of persons who had died in that age group. The same procedure was used for estimating those persons over 65.
(4) The number of children 0 through 5, from the computed fertility rate and the number of women 20 through 44 from (1) used as an estimator.

No attempt was made to determine the population 6 through 19. The figures used in this age group were obtained from the Missouri Department of Education and result from the enumeration of school-age children taken each year by each school district as outlined in the Revised Statutes of Missouri, 1949, Section 194.030. Although many data are collected on school-age population by the Department of Education, most of it is tabulated by school districts. These data are not useful in estimating county populations because many school districts cross county lines.

The use of school enrollment data presents many problems; such as, multiple counts as the same pupil changes schools, the split summer vacations which occur in the southeast section of the State, and other factors. Upon constructing a frequency distribution of the 1950 school enumeration data and the comparable data in the 1950 census, it was found that the ratio of enumerated children to children counted in the census had a mode of 103. The mode and the variance of this distribution seemed small enough to make the data applicable for our needs. There appeared to be no discernible bias in the data.

One of the main reasons the Bogue-Duncan method was chosen for Missouri by the Division of Health is that it is one of the new methods which use school enumeration as only one factor in the estimating procedure. Because the Division had no control over the school enumerating procedures, it was felt that an estimate which gave the least weight to school enumerations would be the best procedure to follow.

After the six separate age groups were computed, they were then added to obtain a county total. The results of the procedure can be examined in the map. The first figure shown in each county is the population estimated by the Division of Health. The wide range of population increases and decreases for the past ten years is shown as the second figure. The third item in each county is the per cent by which the 1959 population estimates varied from the population at that date.

An analysis of the data reveals that the median difference is +2.5 per cent. A frequency distribution is depicted in the table:

[6] Op. cit. 3.

Frequency Distribution of Per Cent of Difference

Per Cents	Number of Counties
—12.5 to — 7.6	7
— 7.5 to — 2.6	20
— 2.5 to + 2.4	40
+ 2.5 to + 7.4	34
+ 7.5 to +12.4	6
+12.5 to +17.4	5
+17.5 to +22.4	2
+22.5 to +27.4	0
+27.5 to +32.4	1

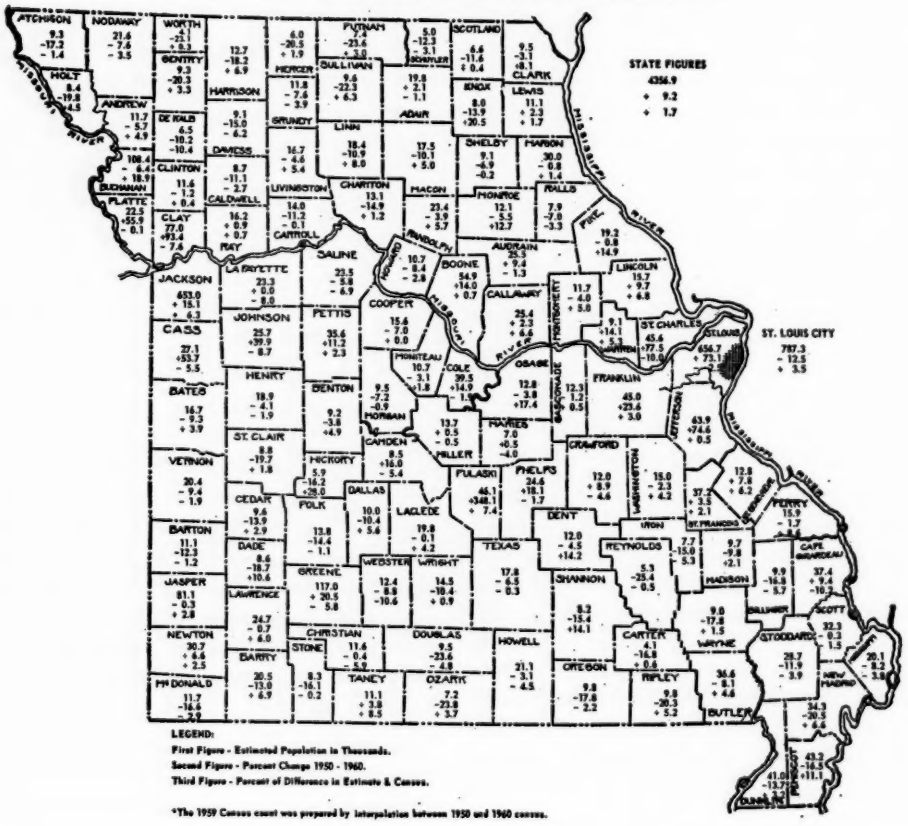
One may determine from this distribution that the method has a positive bias. However, it is felt that this bias is not sufficient to make the method unuseable. As might be expected, better results occur in the larger counties than in the smaller ones. This is due to the relative significance in small random fluctuations in the county vital rates.

Upon examining the map, it seems that the method does not have biases that can be allocated to high or low growth areas. One might presume that certain ethnic or socio-economic groups within counties could cause the vital rates in those counties to fluctuate differently from the national rates; and thus cause constant errors. How-

ESTIMATED COUNTY POPULATION AT JULY 1, 1959

2—Per cent change in actual numbers 1950 to 1960.

3—Per cents that estimates varied from 1959 Census count.


STATE FIGURES
4356.9
+ 9.2
+ 1.7
ST. LOUIS CITY
LEGEND:
First Figure - Estimated Population in Thousands.
Second Figure - Percent Change 1950 - 1960.
Third Figure - Percent of Difference in Estimate & Census.
*The 1959 Census count was prepared by interpolation between 1950 and 1960 census.

ever, it appears from the results that this is not a problem of any magnitude.

Pulaski County is a reflection of the type of error from the method where the distribution of the characteristics of the population has been distorted. This error is due to the influx of soldiers in the Fort Leonard Wood area counted in the 1960 census, but not residing in the area during the 1950 census. When one estimates the civilian population of Pulaski County and then adds the military population, an estimate of 46,132 is obtained which is 7.4 per cent above the 1960 census count. Several other counties will require individual attention and revision in the estimates.

FUTURE ESTIMATING

This method seems to furnish realistic estimates, and close agreement with the current census makes it applicable for the research work carried on within the agency. An effort will be made annually in the present decade to furnish population data for each county and for the principal cities by the use of the present method. Concurrently work will go forward to improve estimating procedure as knowledge advances.

Official census of Population Information is now available, as of April 1960, for Counties, Cities, and small areas. Missouri Division of Health can prepare 1961 estimates after the close of that year using the formula and data specified in Mr. Dundon's article. 1961 estimates will be available in Summer 1962.

The U.S. Economy in 1961

ROBERT W. PATERSON
Professor of Business Research and Director
Bureau of Business and Economic Research
University of Missouri

THE FORECAST FOR 1960

Were forecasters optimistic last year? A brief review of some of the Gross National Product predictions made a year ago for 1960 may be enlightening:[1]

Forecaster	GNP in Billions
F. W. Dodge Corp., Poll of 273 Economists	$514
Sylvia Porter	500 or more
Report for the Business Executive	507
Gerhard Colm, *Looking Ahead*	Up $15 to $20
Malcolm P. McNair, *Business Outlook for 1960*	Close to $500
Business Week	515
J. A. Livingston, Poll of 58 Economists	507
Paul McCracken, *Journal of Commerce*	512
Fortune	512
U. S. News and World Report	505
A. W. Zelomek, *Bulletin of NAPA*	511
Donald I. Rogers, *N. Y. Herald Tribune*	526
Robert W. Paterson, *Mo. Bus. and Econ. Review*	515

Some of the forecasts were less specific than others, indicating a cautious attitude somewhat characteristic of economists but not of prognosticators. The range of predictions runs from $500 billion to $526 billion. It now seems probable that GNP in 1960 will total about $505 billion. If forecasters are allowed a margin of error of two or three per cent—their records in 1960 are quite good. To be sure, optimism was present in the list since only a few of the individuals estimated GNP at a level below that reached during the year. But the extent of overoptimism was certainly less than has been portrayed by news media in recent weeks.

PUBLIC CONFIDENCE

Perhaps, the decline in public confidence in the last several months has been stressed too much. Or, the fact that international peace seemed increasingly impossible of attainment during 1960 may have had a damping effect on consumer willingness to

[1] A review of forecasts for the year ahead is compiled each year by the Federal Reserve Bank of Richmond. These reviews constitute important records for assessing the relative merits of individual forecasters. The record referred to here was published by the Bank in February, 1960, under the title, **Business Forecasts for 1960.**

take whatever was offered in the market place. Or, the fact that Americans have achieved a relatively high level of affluence over the last 25 years may have resulted in a drying-up of the primary demand[2] for large consumer durable goods. If so, legitimate product improvement and innovations will be necessary to bring current and future demand to a higher level. Then too, the growing volume of unemployment has cut seriously into the American consciousness and adversely affected the demand for all but necessity goods in millions of homes. And, if seasonal forces prevail, unemployment will rise through March of 1961 because of declining demand for workers in agriculture and construction industries. Thus, areas of substantial labor surplus (in November, 1959 there were 32 such areas; in November, 1960 the number increased to 51) will probably increase in the very near future. Looked at from a long-term point of view the future is cloudy indeed. In the 1960's about 26 million young workers will be entering the job market. This is a much greater number than ever entered it before in a similar period of time and emphasizes the urgent need for expansion of the current economic base.

PERSISTENCE OF STAGNATION?

Generally, the economy has achieved a high level of output in recent years. In 1960 GNP broke into the half trillion dollar area. What worries many, however, is that with each successive post-World War II contraction in the economy there has been a persistence of excess capacity and unemployment in following periods. Thus, the presence of stagnation is apparent even when the economy is operating at a "full-employment" level.

[2] Primary demand is used here to denote people who do not have products because of low incomes. As incomes rise they acquire them, thus reducing the total market potential. No longer is one-third of the nation "ill-housed, ill-clad, or ill-nourished."

EXPANSION OF CAPACITY

Interestingly, business expenditures on plant and equipment increased from $32.5 billion in 1959 to $36.1 billion in 1960. Expenditures of $35.1 billion are anticipated in 1961.[3] If 1960 was a "soft" business year, and if 1961, in part or in whole, is soft, then it is a little difficult to understand why business firms are continuing to pump funds into new plant and equipment—unless there is considerable shifting going on in the composition of business enterprises using such funds.

McGraw-Hill reports that expenditures among manufacturing firms will decline 3 per cent from 1960 to 1961. But the significant percentage declines, when broken down by types of manufacturing will occur in iron and steel (—10); transportation equipment (—10); other metalworking (—12); paper and pulp (—8); stone, clay, and glass (—11); and textiles (—21). Increases in new plant and equipment expenditures are anticipated in electrical machinery (10); autos, trucks, and parts (7); chemicals (2); petroleum and coal (3); and food and beverages (5).

Plant and equipment expenditures today are made not merely to duplicate existing facilities, although there is some of that. They are made to produce new products and to modernize obsolete facilities. They are also made in direct response to government policy.

GOVERNMENT EXPENDITURES

Failure to separate public policy and maladjustments in the output of private enterprises can be disastrous. The fact that private enterprise no longer completely dominates investment decisions is of central importance in any analysis of the current

[3] Fall 1960 survey conducted by McGraw-Hill, Department of Economics. The figure for 1961 is "regarded as an upper limit if business continues to be soft." Source: **Business Week**, November 19, 1960, p. 46.

outlook, but of even greater importance is the effect of government expenditures on the direction of private investment.

IMPACT OF GOVERNMENT EXPENDITURE

At the federal government level, expenditures of $79.9 billion are expected during fiscal year 1961. Of this amount over 57 per cent will probably be expended for purposes of national security. This heavy expenditure claims a sizable share of the output of private firms and has caused them to budget sums for capital expansion and research accordingly. The firms capable of undertaking highly complex assignments in such areas as nuclear propulsion, space reconnaissance, missile systems design, etc., are large even though considerable work may be subcontracted to smaller firms with highly technical staffs.

Extremely significant by-products of such government expenditures are:

(1) to enable the firms now doing work under government contracts to expand their scientific lead over others;
(2) to increase the possibility that an important consumer product will be realized through the work carried on by company researchers;
(3) to increase the proportion of highly technical personnel employed by companies fulfilling government contracts;
(4) to push back on the colleges and universities increasingly heavy pressures to expand technological education; and
(5) to increase unemployment among unskilled workers in consumer product industries.

While all this has been going on, consumers seem to have become a little repelled by the notion that a new car is necessary every two or three years or that a clothes washer is worn out after three or four years. Such notions emphasize the advantages of technological lead-time that can be attained by a firm as a factor in holding a drooping consumer goods market.

Statistics on industrial production show the areas where demand was weak in 1960. The total index (1957 = 100) fell from 111 in January to 105 in November, 1960. In manufacturing the decline was from 112 to 105. The index of consumer products fell from 116 to 113. From January to November, 1960, the index of primary metals fell 39 points. The index of equipment, including defense, was unchanged at 103. This item makes up 15.6 per cent of all items included in the index—an indication of its importance in shoring up production generally.

The average index of industrial production through November, 1960 was up 4 points from the average in 1959 . . . the same amount of increase that occurred in private and defense equipment production.

PRODUCTION vs. CONSUMPTION

While the index of industrial production rose 4 points from 1959 to 1960, personal income increased $20 billion, or slightly more than 5 per cent. Personal consumption expenditures of individuals were up $14.5 billion in 1960, an increase of about 4.5 per cent over 1959.

Personal saving increased $3.5 billion, or almost 15 per cent, between 1959 and 1960 while consumer credit, over the same period, increased $2.4 billion, or a little more than 4.5 per cent.

With unemployment rising to almost 5 million in December 1960 (a seasonally adjusted rate of 6.8 per cent of the civilian labor force) it is surprising that the economy has not contracted more than it has in the last few months. The composition of unemployment yields some hints as to why there has been no severe cumulative decline in personal income in recent months. In October 1960, the latest date for which information is available, the unadjusted rate

of unemployment was 5 per cent. The rate for professional personnel was 1.5 per cent; for clerical personnel, 4.1 per cent; for sales people, 3.2 per cent; and for skilled craftsmen, 4.3 per cent. These rates range very close to the rate of 4.0 per cent which is considered to be the point below which full-employment exists. But, the rate for semiskilled operatives was 7.3 per cent, and that for unskilled laborers was 10.9 per cent. These last two groups accounted for almost 40 per cent of all unemployed in October 1960.[4]

Unemployment seems to have been contained very largely among the younger age group (those under 25 years of age accounted for 32 per cent of the unemployed in October 1960) and among the unskilled.

Expenditures of younger workers and of unskilled workers when reduced because of unemployment have a heavy impact on both durable and nondurable items, but purchases of durables are almost completely eliminated from budgets.

The major consideration here is that skilled, technical employment has not been adversely effected in recent months. This does not lessen the serious consequences of unemployment in areas of labor surplus, but it does point up the highly important fact that the economy is becoming increasingly dependent upon technology for its upward thrust. The days of the unskilled worker are rapidly declining. This fact alone has many implications not the least of which are its possible effects on institutions of higher education and upon the development of vocational training.

ASSUMPTIONS FOR 1961

The item forecasts set-out in the accompanying table are based on the following assumptions:

1. Public confidence in the economy will be strong during the year but will not reach the point where consumer demand is markedly affected. A cautious consumer attitude will be noticeable, especially where consumer durable goods are concerned.
2. The recent change in national administration carries with it the possibility that public confidence in the economy will be greatly influenced. Firm resolve, vigorous leadership, and timely actions on the part of the new President could be the source of spirited economic growth. Dramatic use of tax reduction to spur business activity seems a distinct possibility. But, prospects for resolving such long-term problems as unemployment and the growing participation and influence of the defense and space establishments upon the private sector, in the short-run, are poor.
3. International relations between the east and west will continue to be relatively hostile, but no war will envelop the United States.
4. Federal, state, and local government expenditures will rise but expenditures in the private sector will be relatively unchanged.
5. Prices will rise by about the same amount as in 1960.

AGGREGATE ACTIVITY IN 1961

If the item forecasts prove to be accurate, new records in the aggregate economic activity of the United States will be set in 1961.

Gross National Product will rise to a level of $520 billion in 1961 and each of its components, personal consumption expenditures, gross private domestic investment, net exports, and government purchases of goods and services, will increase. GNP will rise about $15 billion over the 1960 figure.

[4] Hearings before the Joint Economic Committee, **Current Economic Situation and Short-Run Outlook**, December 7 and 8, 1960. Statement of Seymour L. Wolfbein, p. 12.

BUSINESS STATISTICS AN

Year	NATIONAL PRODUCT 1. Gross National Product	2. Personal Consumption Expenditures	3. Gross Private Domestic Investment	4. Net Exports	5. Government Purchases of Goods & Serv.	POPULA 6. Population	7. Civili Employm (Mill
		(Billions of Dollars)					
1952	347.0	219.8	49.9	1.3	76.0	157.0	61.0
1953	365.3	232.6	50.3	—.4	82.8	159.6	61.9
1954	363.2	238.0	48.9	1.0	75.3	162.4	60.9
1955	397.5	256.9	63.8	1.1	75.6	165.3	62.9
1956	419.2	269.9	67.4	2.9	79.0	168.2	64.7
1957	442.5	284.8	66.6	4.9	86.2	171.2	65.0
1958	441.7	293.0	54.9	1.2	92.6	174.1	64.0
1959	482.1	313.9	72.0	—1.0	97.2	177.0	65.6
1960[a]	505.0	328.4	74.8	2.2	99.6	181.5	67.3
1961[b]	520.0	338.0	75.0	2.5	104.5	183.8	68.5

Year	PERSONAL INCOME AND SAVING 13. Personal Income	14. Realized Net Income from Agriculture	15. Wage and Salary Disbursements	16. Proprietors (Bus. & Prof.) and Rental Inc.	17. Personal Interest Inc. & Dividends	18. Personal Saving	PR 19. Index of Industrial Production (1957 = 100)
	(Billions of Dollars)						
1952	273.1	15.3	190.2	37.1	21.1	18.9	84
1953	288.3	13.3	204.1	37.9	22.6	19.8	91
1954	289.8	12.7	202.5	38.7	24.4	18.9	85
1955	310.2	11.8	218.0	41.1	27.0	17.5	96
1956	332.9	11.6	235.7	43.0	29.6	23.0	99
1957	351.4	11.8	247.7	44.2	32.2	23.6	100
1958	360.3	14.0	249.1	44.5	33.2	24.4	93
1959	383.3	11.8	258.2	47.1	36.9	23.4	105
1960[a]	404.0	11.3	272.5	48.1	40.8	26.9	109
1961[b]	423.0	12.0	288.0	50.2	43.5	29.0	113

Year	SALES and INVENTORIES 25. Retail Sales	26. Wholesale Sales	27. Manufacturing Sales	28. Retail Inventories	29. Wholesale Inventories	30. Manufacturi Inventorie
			(Billions of Dollars)			
1952	162.0	115.2	273.6	21.6	10.0	43.8
1953	169.2	117.6	294.0	22.7	10.5	45.4
1954	169.2	116.4	282.0	22.1	10.4	43.0
1955	183.6	127.2	315.6	23.9	11.4	46.4
1956	189.6	135.6	332.4	23.9	13.0	52.3
1957	200.4	135.6	340.8	24.5	12.7	53.5
1958	200.4	133.2	314.4	24.0	12.0	49.2
1959	216.0	147.6	356.4	24.3	12.6	52.4
1960[a]	220.8	148.8	369.6	25.2	13.2	55.1
1961[b]	224.2	149.3	381.0	25.6	12.9	54.8

[a]*Preliminary.* [b]*Estimates*

Sources: Various issues of U. S. Department of Commerce, *Survey of Current Business; Current Population Reports;* U. S. F eral Reserve System, *Federal Reserve Bulletin;* and Council of Economic Advisers, *Economic Indicators.* Preliminary f Missouri.

AND 1961 FORECAST

OPULATION and EMPLOYMENT				NEW BUSINESS and FAILURES		
7.	8.	9.	10.	11.	12.	
Civilian mployment (Millions of	Agricultural Employment People)	Nonagric'al Employment	Unemployment	New Business Incorporations (Thousands)	Business Failures	Year
61.0	6.8	54.2	1.9	92.8	7.6	1952
61.9	6.5	55.4	1.9	102.5	8.9	1953
60.9	6.5	54.4	3.6	117.2	11.1	1954
62.9	6.7	56.2	2.9	139.7	11.0	1955
64.7	6.6	58.1	2.8	140.8	12.7	1956
65.0	6.2	58.8	2.9	136.7	13.7	1957
64.0	5.8	58.2	4.7	132.5	15.8	1958
65.6	5.7	60.3	3.8	194.5	14.2	1959
67.3	5.8	61.5	4.5	178.0	15.6	a1960
68.5	5.5	62.6	5.1	185.0	15.5	b1961

— PRODUCTION and CONSTRUCTION —				— HOURS and EARNINGS —		
	20.	21.	22.	23.	24.	
of rial ction = 100)	New Construction Activity (Bil. Dol.)	Bus. Expend. on New Plant & Equipment (Bil. Dol.)	Sales of Electric Power to Comm'al & Industrial Users (Bil. KWH)	Average Hrs. Worked Per Wk. Manufacturing	Average Wkly. Earn. Manufacturing (Dollars)	Year
34	34.7	26.5	229.4	40.7	67.97	1952
91	37.0	28.3	259.2	40.5	71.69	1953
35	39.4	26.8	273.5	39.7	71.86	1954
96	44.2	28.7	330.0	40.7	76.52	1955
99	45.8	35.0	363.4	40.4	79.99	1956
00	47.8	37.0	377.0	39.8	82.39	1957
93	48.9	30.5	367.0	39.2	83.50	1958
05	56.2	32.6	414.0	40.3	89.47	1959
09	55.1	35.7	436.3	39.6	91.50	a1960
13	57.3	35.8	458.0	39.5	92.75	b1961

30.	31.	— CREDIT —	33.	— PRICES —	35.	
facturing ntories	Automobile Manufacturers Sales (Millions of Cars)	32. Total Consumer Credit (Billions of Dollars)	Automobile Instalment Credit	34. Consumer Price Index (1947-49 = 100)	Wholesale Price Index	Year
43.8	4.3	27.5	7.7	113.5	111.6	1952
45.4	6.1	31.4	9.8	114.4	110.1	1953
43.0	5.6	32.5	9.8	114.8	110.3	1954
46.4	7.9	38.9	13.5	114.5	110.7	1955
52.3	5.8	42.5	14.5	116.2	114.3	1956
53.5	6.1	45.3	15.4	120.2	117.6	1957
49.2	4.2	45.6	14.2	123.5	119.2	1958
52.4	5.7	52.0	16.6	124.6	119.5	1959
55.1	6.8	54.4	18.6	126.7	119.5	a1960
54.8	6.8	56.5	20.7	128.5	119.7	b1961

. S. Department of Agriculture, *Farm Income Situation; Demand and Price Situation;* Board of Governors of the Fed-
ary 1960 and estimated 1961 figures prepared by Robert W. Paterson, Bureau of Business Research, University of

The major stimulus will come about through government activity and a reduction in tax rates on individual incomes during the spring. Although private business capital outlays may not advance, the expansion of government spending will more than offset this weakness.

An increase of $19 billion in personal income will probably occur, providing sufficient power to boost retail trade to new heights in 1961.

The most serious pressure exerted on the economy in 1961 will continue to come from unemployment. The outlook is that it will rise to a level averaging about 5 million for the year.

Thus, the problem of the forecaster for 1961 is in judging relative strengths and weaknesses of the short-term situation and determining which of these forces will prevail. At the moment, the weakness in personal income (it declined from $409.7 billion in October, to $409.0 billion in November, to $406.7 billion in December) is the most discouraging sign yet encountered. Still, it comes at a time when the nation's eyes are fastened upon a new administration. Prudent action could alter the direction of public confidence and the economy. This observer believes it will.

Government As a Source of Anticipatory Data*

STANLEY LEBERGOTT
Bureau of the Budget
Washington, D. C.

We take our text from an old hymn:

Through the night of doubt and sorrow
Onward Goes the Pilgrim band
Singing songs of Expectation
Marching to the Promised Land

Is there a happier description of the able company of economists who have, recently discovered the amaranthine fields of Expectational Economics? True, the present worth and wisdom of capital investment has long been understood to rest on expectations of future returns. And what economist has doubted that the demand for durables is largely affected by the consumer's keen anticipation of the joys that are to flow tomorrow from his purchases today? But recent analysts have gone further, suggesting that we measure directly the strength and direction of these expectations—both to tighten our analytic models and to project tomorrow's Gross National Product.

What should the Federal Government be doing in this half ancient, half novel field of study? Our answer must turn first on our definition of what are appropriate government functions. In Madison's time, the Secretary of the Treasury argued that Federal functions encompassed the making of low interest loans to manufacturing firms.[1] In Wilson's time the Postmaster General urged the taking over of the telephone and telegraph systems because "they fall properly within the postal provision of the Constitution."[2] In Cleveland's time the President vetoed an appropriation giving $25,000 worth of seed corn to Texas farmers hit by a drought, doing so "to teach the lesson that while the people support the Government, the Government does not support the people."[3] In our own day the Congress and the Executive have rarely been in more harmonious accord than in agreeing that billions of additional gasoline tax dollars should be levied for the highway program.

FEDERAL NEEDS

Can we deduce from such contrary examples any simple definition of what the

*The opinions expressed are not to be construed as official.

[1] **American State Papers, Finance,** II, p. 430.
[2] Reports of the Post Office Department, 1913.
[3] Quoted by Franklin Edmonds, "A Taxing Program for the Nation," in **Proceedings of the Tax Association** (1933) p. 33.

American people consider to be a proper Federal activity? I find it difficult to do so, and shall therefore attempt to deal with our topic by redefining the question to read: "What anticipatory data should the Federal Government provide for its own policy needs in the 1960's?" By anticipatory data I refer not to forecasts but to *data*—data primarily from the decision units concerned, who report on their likely future actions. Such data would serve as raw material for an analyst, private or public, with which to construct his own hunches or forecasts.

Our answer rests on two premises. First, that there will continue to be widespread acceptance of the Employment Act of 1946, with the obligation that it lays on the government to foster maximum production. Second, that efforts will continue to be made to prevent procurement for defense from bidding up the price level. Now if in fact government policy officials are to work rationally toward such goals, surely they require a basis for anticipating what major changes in Gross National Product, and its key components lie ahead in the near future. Without such knowledge the government is powerless to act efficiently, and in proportion. Pooh Bear could very well "say 'Hi' to any loud cry"—but is it wise for the government to do so? Before responding to loud demands or plaintive appeals, must not the government know at least roughly what they mean, and what they may portend? A particular government action to stop an economic decline, for example, may be beneficial, malicious, or widely irrelevant, depending upon what contrary forces are underway in the private sectors of the economy. Government action to blunt short term pressures on prices or spending may be well or ill-timed, depending on what trends are underway in the absence of such action. Hence, policy officials must be concerned with analyzing economic trends in the future as well as in the recent past.

We can make no general brief that anticipatory data will help policy makers however, any more than that actual data will do so. Some anticipatory data, such as producers' spending for plant and equipment, may well be more reliable than some actual data—such as government reports on how much duck hunters spend on refreshments when in the course of their travels. But some anticipatory data may be far inferior to actual data. Our decisions should therefore turn on a review of specific proposals.

TYPES OF ANALYSIS REQUIRED

It is at this point that we must ask which of the three main types of anticipatory analysis the government itself requires. Type I is known as judicious situational analysis. This is carried out by phoning Joe, after *he* checked with John—who was filled in on our views earlier this week. Such a recursive system of analysis has its virtues, of course. But they do not include telling us clearly and unequivocally when a turnaround in the economy is taking place—perhaps the only reason for indulging in it in the first place.

Type II analysis is partial equilibrium analysis by a limited set of functions. It may involve forecasting auto demand, say, by relating sales to stocks, age of stocks, number of newly weds and so on. It may also involve forecasting consumer spending by using a relationship between the anticipated level of income and past relationships between income change and consumption. Such functions can be nearly infallible for retrospective forecasting. But they often fail to anticipate the economic turnarounds that do occur; and they occasionally will cry havoc when there is nothing much about which to get excited.

We therefore come to Type III analysis, in which a variety of relevant data are incorporated into a more or less systematic consideration of the total economy and

changes in its major inputs and outputs. Whether such analyses take the form of a systematically developed model with results worked through by electronic computation, or a model using much less elegant (and perhaps less reliable) procedures, it is ideally suited for incorporating anticipatory data. For anticipatory data provide their maximum usefulness as one component in a total projection, and not as an isolated prediction of what will unquestionably take place.

If we review the major decision sectors of the economy we shall find that the government is already providing anticipatory data on most of these. The record probably starts with the Department of Agriculture before World War I, beginning a long history of collecting forecasts from farmers on such items as crop condition and acreage planted—from which forecasting the output of the major industry of the time could then fairly reasonably be made. Today we shall find the Federal Government provides some anticipatory data for a great many decision sectors. Let us consider merely the major ones.

FORECASTING FOR THE MAJOR SECTORS

The Federal Sector

It is, perhaps, not a parochial statement to say that in our time the size and changing shape of Budget expenditures plays a major role in determining whether production and employment in the period ahead will rise or decline. The Budget itself is, of course, a statement of what the Federal Government will spend under the President's program. In additon to utilizing the wealth of detail in the Budget itself, the analyst can draw as well from the supplementary materials in the Mid-year Review. These reflect changes in the overall economic and political situation as well as differences between Budget estimates and Congressional appropriations.[4]

Since it is a difficult enterprise for the economic analyst to phase obligations out over future periods, it is important to note a major new source being pioneered by the Defense Department to assist in effective financial administration. For major contract areas (encompassing missile, aircraft and certain other procurement items) a relatively new program has been instituted, in which contractors spell out each quarter the amount they expect to bill the government on future quarters of the contract. Since such a procedure utilizes the most knowledgeable persons concerned to translate broad obligation figures into quarterly projections covering the most difficult sizeable item in the government expenditures, it marks a major advance in data on government spending. Such a program now covers only some expenditure areas. It would be enormously more valuable to the economic analyst, administrator and congressman if it covered most defense contract areas.

State and Local Government Expenditures

A strengthening factor in the 1949 recession, as in the 1957-58 one, was the item of state and local expenditures. How to forecast the extent to which such outlays will moderate a decline? By somehow combining local decisions on tax rates, the volume of new bond issues floated, the credit condition of various municipalities, we can, of course, produce a tenuous forecast. A more direct approach is worth considering. The Budget for fiscal year 1959 proposed quarterly surveys of state and local government finances—surveys which constitute an

[4] The use of the Budget in economic forecasting is succinctly but comprehensively outlined by Samuel M. Cohn in "Problems in Estimating Federal Government Expenditures," **Journal of the American Statistical Association,** December 1959.

ideal vehicle for querying our local governments on their anticipated outlays in say the 4 quarters ahead. Since so many state and local governments now have formal budgets, such projections should give reasonably reliable estimates. And since their expenditures over the budget period tend to be largely invariant to short term changes in the economy, they tend to be exogenous variables—usefully incorporated into an economic model. But while the Budget proposes, Congress disposes and we have now no survey in the area.

Construction

Dispite the extent of Federal guarantees and supports for the purchase of housing, despite the highway programs, and the urban redevelopment program, predicting the level of construction activity is almost anybody's game. The annual conferences held by private organizations on "What's ahead in construction?" are helpful and widely attended. A new program has been recently initiated by the American Institute of Architects to survey work on architect's drawing boards. The National Association of Home Builders has for some years asked builders some extremely shrewd questions on the number who plan to start homes, the number starting with and without firm committments for financing, and other items of direct relevance. Because of FHA and VA activity in the housing market these agencies have, as one would expect, extensive knowledge of local conditions and a basis for anticipating the trend in housing supply and demand.

One approach to providing systematic and comprehensive anticipatory data that could be used by all groups to make their own judgments and forecasts has been outlined in a report to the Federal Statistics Users Conference. The report suggested that a Federal survey be made much along the lines of the Home Builders survey, but covering a more extensive group than the roughly 500 firms reporting in NAHB sample. And it would not be limited to a small and variable portion of a total activity, such as that covered by architects' contracts. The conference report proposed more specifically, to take advantage of the existing U. S. Bureau of Labor Statistics survey in which 15,000 construction firms are already queried each month on their employment and payrolls, by asking them (in addition) how many houses they planned to start in the period ahead. The start data, of course, have their intrinsic interest as an economic indicator. But no less important is the fact that they sum the net resultant on residential construction of the multifarious government policies—to speed up or slow down housing approvals, to tighten or loosen credit, to bid for more or fewer materials under the defense program, to expand depreciation allowances, etc.

It would, of course, be most helpful if to (a) information on planned starts we could add, (b) a figure on say the per cent increase that the contractor expects to make in his total outlays over the quarter ahead. Such information would make possible a projection for each major type of construction, not merely residential. It would also make it unnecessary to go through the difficult sequence of tenuous adjustments involved in translating starts via historically valid lag adjustments, lapse adjustments, and valuation adjustments into a forecast of outlays. The advantage of a sample of 15,000 already reporting firms over one of 500 respondents is a distinct one—particularly since the smaller sample includes a large number of particularly public spirited members of the industry. Their changing plans may not give us an unbiased indication of trends for the industry as a whole.

On the other hand the variety of information secured in the Home Builders survey is extensive and extremely meaningful for understanding the full meaning

of a simple forecast of anticipated houses to be built or total expenditures. Possibly one might look forward to using such a wide ranging survey to assess and to break down anticipatory figures derived from a larger, adequately representative sample.

Agriculture

Government soothsayers have been most active in the annual Agricultural Outlook Conferences of the Department of Agriculture, where projections of farm price figures, marketings and incomes have been made for more than a quarter century. In addition, the Department provides an important set of anticipatory data in reports from farmers on the amount of acreage they intend to plant in certain crops, on the condition of the crop and other data bearing on the amount of the crop they expect to harvest. In the days when farming was our major industry such data provided essential information for analysts; and even today it constitutes an essential element in discussing economic change.

Within the past three years the Department has begun, in cooperation with Michigan State University, an experimental program of reporting farmers' intentions to buy tractors and other farm machinery. It is still too early to conclude much about possibilities, but not too early to conclude that the problems raised are closely similar to those raised in manufacturer's reports on planned investment and household reports on expected spending. Hence solutions found in this program may have a wider application.

Manufacturing

Results of the major government survey in this area have, I am sure, been widely utilized. The Office of Business Economics and Securities and Exchange Commission collaborate in a survey of manufacturers' plans to purchase plant and equipment in the half year and year ahead. This is part of a broader survey providing data for plant and equipment spending by other industries, including (with the ICC) railroads. While requiring and receiving steady improvement, this invaluable survey seems for many years to have produced far "more information than misinformation," to use the words of one able analyst.

It is also within the maufacturing area that we find the most volatile element in total gross product—namely, inventories. Since inventories reflect the natural method of adjustment between production and sales, it is only to be expected that their movements should be sharp. They are also substantial. In the decline from the last quarter of 1957 to the first quarter of 1958, inventories fell by $5.1 billions—almost as much as the decline in personal expenditures for durables, plus the decline in residential construction, plus the decline in producers' durable equipment. It is not surprising that the Department of Commerce has begun to test methods of collecting data on anticipated inventory change. Since the fall of 1957 its Office of Business Economics has been engaged in a testing program to determine how adequately reports from manufacturers can anticipate inventory change. These forecasts, now made for two quarters ahead, are reported by each firm in the context of coordinate forecasts for sales, and statements as to whether the company believes its stocks to be on the high side, low or in line in the light of their unfilled orders and projected sales.

I think it unduly optimistic to believe that we can derive direct projections of inventory change from a tabulation of these inventory forecasts. But would it be unduly optimistic to believe that by utilizing these data we could eventually improve our projections of desired inventory levels a quarter and six months ahead? Put such projections into an overall, systematic analysis and we could then derive the

cumulated consequences for national sales and the national product.

Trade

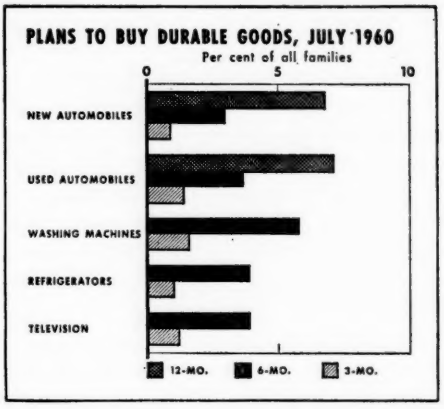
More than any other group in the economy the entrepeneurs in retail trade are sensitive to the changing whims of consumers. Regardless of the perceptiveness with which they judge these whims, however, retailers own actions exercise a direct and independent influence on the trend of product and employment. These actions are embodied in a set of anticipatory actions for which we now have little data. I refer to the orders retailers place with their suppliers, thus summarizing in numerical form their net judgment on forward consumer takings and the extent to which they propose to meet them out of existing inventories.

The Federal Reserve Board has long reported on Department store orders. But there is an interest in the considerable aggregate of retail sales not made by department stores, particularly in the trend for each of the major lines of business. Some may ask why not get the sample of wholesalers already reporting in the Census Bureau's Monthly Report on Wholesale Trade to report the dollar volume of new orders placed with them by retailers (as well as cancellations of old orders). Such orders data reflect retailers' judgments of consumer reactions, and of the steps retailers must take to achieve the sales inventory ratios they desire. Moreover orders would reflect demands eventually referred back to the manufacturing level.

Consumers

The pioneering done by Federal agencies in obtaining data on consumers' anticipated spending and use of saving is well known. Beginning with the work of Rensis Likert and his associates in the Department of Agriculture, such research continued under the auspices of the Federal Reserve Board in the widely known Survey of Consumer Finances. The downturn of 1957-58, however, demonstrated as much as the halcyon year of 1955 that predicting automobile demand and consumer durable takings was still an art—though perhaps beyond the stage in which animals' entrails were to be consulted.

At the instance of the Budget Bureau, roughly two years ago, work was started on a new survey, a Quarterly Survey of Buying Intentions, conducted by the Census Bureau, also under Federal Reserve auspices[5] This work, still exploratory, was



Source: "Quarterly Survey of Consumer Buying Intentions," **Federal Reserve Bulletin**, p. 979, Washington D. C., September 1960.

designed with particular emphasis on two aspects. One was to take advantage of a relatively large sample of households—some 18,000—for whom data on employment status, demographic composition, industry, occupation, etc., were already being reported every month as a part of the Census Bureau's Current Population Survey, and for which income data were being collected annually.

A second consideration was this. Given such a monthly survey, inquiries could be made with sufficient frequency—every

[5] **Federal Reserve Bulletin,** Washington, D. C., September, 1960 Consumer Buying Intentions, p. 973.

quarter to begin with—so that consumers would have a chance to reconsider their expressed plans to buy durables in the light of recent changes. For experience showed that consumers do not continue to love durables in December as they did in May—and that forecasts made early in the year do not mellow like a vintage wine so that they are even better late in the year. A monthly or quarterly repetitive survey, however, gives the consumers themselves a chance to revalue their intentions, relieves the analyst of the dubious task of adjusting intention reports for changes in Khrushchev's smile, the advent of the agile compact car, and second differences in wage rates. The new survey was begun with no fanfare and, I am happy to add, with no Budget expenditures—using Budget with a big, big "B." Experience to date has been most encouraging, for a large scale survey was initiated and a smooth running operation gotten underway in remarkably short order.

TWO MAJOR PROBLEMS

The first concerns how we integrate attitude, intention *and* traditional economic data into an overall estimate of the number of persons likely to buy specific durable and possibly nondurable items. No economist worth his salt is going to rely merely on statements of anticipations or intentions when it comes to forecasting durable demand. For by merely adding up intentions to buy a car, for instance, we count with an equal weight a plan expressed by the solid citizen who has $50,000 a year and the equally firm plan expressed by an unemployed farm hand. On the other hand no economist has yet come up with a function that both takes traditional economic variables and is sensitive enough to show major short-term changes in demand. The task ahead is to combine family survey reports (a) on more factual economic items with (b) those on intentions, to produce a combined estimate of the likelihood of family buying a specific item or set of items. Perhaps the simplest method of doing this is to attribute to each family with a combined set of characteristics the same likelihood of buying in the period ahead as was true of those families with a similar set of characteristics in the period just past. Using this procedure, for example, persons with high and rising income, relatively old cars and planning to buy in the next three months would be given a much higher probability of buying than other families who also planned to buy in the next three months, but had low and declining incomes and relatively new cars. The changing distribution of families by probability of buying would then summarize, each quarter or each month, the entire set of information which the survey provides for consumers.

A second major problem is that of inadequate experimentation. Clearly such characteristics as age of family head, age of car, even family income, move in such simple linear fashion that they help very little for anticipating short-term turnarounds in consumer behavior. On the other hand, changes in family income and expressed intentions to buy are items with the required sensitivity—particularly if our reports are up to date. But we are a long way from having enough such items, and ones related to the real determinants of consumer action. Many more questions must be tested: the catalog of alternatives was hardly exhausted by astute analysts 15 years ago, 10 years ago or even one year ago.

Wages

At this point we turn from anticipatory data to measures of expenditures in the major sectors where the exogenous factors hold their court. The data discussed above are all forecasts in unspecified price terms—presumably current prices, but not clearly so. The analyst who would safely use such

data for projections must test the consistency and the reasonableness of the real trends implicit in these various anticipatory totals. In addition he will want to have some idea of the rate of change in wages and prices per se. Past experience gives him little better basis then assuming no change, or no change in the rate of change.

We suggest, however, that there is a body of helpful information already present in the depths of the government's electronic equipment. These are data that bear on the strength and intensity of recent wage changes—data that help tell us the extent to which a new wage pattern is developing. We need not enter the arena where the blues and the reds are massacring each other, where cost-push and demand-pull advocates contend, to agree that wage rate changes are in some measure a cause and in addition a reflection of other market causes that join to bring about price changes. But if we can agree on this, then some measure of wage rate changes should be helpful in anticipating the dimension of wage earnings and price changes—conceding all the grave difficulties of allowing for productivity changes, pricing policies and so on. If we are not in search of simple explanations but simply of data that the analyst can usefully draw upon, then we might well consider utilizing data on earnings in establishments already reporting to the Bureau of Labor Statistics on employment and payrolls.

The data suggested here would be in the form of monthly distributions of employment, within major manufacturing industries, by size of average-earnings change from the previous month—up 1 cent, up 2-3 cents and so on. If shown for each major manufacturing industry, the comparison of these distributions over previous cycles and the recent past would help reflect the extent to which a new wage pattern was in fact developing.[6]

We know, of course, that even when a dominant firm sets the pace for an industry, the extent to which all firms had already moved toward the new level is not uniform. And in most industries the rate of adjustment is neither uniform nor instantaneous. Firms on the solid edge of the market will be offering rates above those paid by other firms—for labor, as for other inputs. Firms with growing sales, improving productivity, and high profits, are more likely to be raising wages than firms who do not. The pattern of wage adjustment spreads out from a limited number of firms to a larger number that must keep pace or lose their labor.

In the continuous process involved here as the economy rises (or the parallel one when it declines) the average hourly earnings must change first in some plants and, after a time, in a growing number of plants. Wage increases to a single category of workers in a plant are infrequent, and when given, tend eventually to create pressures for other raises. Given the existence of wage structures within plants, an "appropriate" distance is kept between rates paid to machinists and to semi-skilled workers, between semi-skilled workers and janitors, and so on. Hence wage adjustments are eventually summarized in the change in the average hourly earnings figure for the establishment.

If, for past periods of cycle changes, we accumulate a set of distributions of plants

[6] The trend in average hourly earnings per se is unsatisfactory for this purpose. At any given time earnings will be changing at different rates in different firms. If one wants to know whether a new pattern—5 cents an hour additional, say—is developing, the initial stages would be concealed in the trend for the over-all average. The subsequent stages would affect the average distinctly, but the change would be within the bounds of reporting and "sampling" variation. Only when the movement was well along could one clearly discern that change by looking at the average hourly earnings figure.

by hourly earnings changes we can begin to develop the understanding needed to translate today's distributions into a basis for projecting tomorrow's wage change.[7]

SUMMARY

Our conclusions from the foregoing discussion can be very brief indeed. We have reviewed some actual, and proposed some additional programs of Federal data collection and tabulation—programs that should provide data useful for anticipating short-term economic change. We have noted the variety of programs already underway to indicate future expenditure changes by the Federal Government, by consumers, by firms investing in plant, equipment and inventories. We have considered possible changes in some of these surveys as well as possible additions to measure forthcoming construction starts and expenditures, retailers' orders, state and local expenditures; as well as measures of the current trends in wages to help indicate incipient wage trends.

The vital complementary role of major private surveys, such as those of McGraw-Hill, the National Industrial Conference Board, Survey Research Center and many others, is obvious. Though these are beyond my topic here, they are, of course, of central value to the analyst. Anticipatory data like modern art, penicillin, and rock and roll music are here to stay. Our problem, as analysts, is simply to make them increasingly reliable and pertinent to the purposes of the policy maker in government and business.

[7] Such other forces as changing occupational composition and overtime change will mask wage rates changes per se, though probably little in the short run period with which we are concerned.

Missouri's Game Populations

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To evaluate properly Missouri's present day game population it becomes necessary to understand some happenings of the past. History, as it serves as a guide to the future, shows trends in two areas of human endeavor which have profoundly affected Missouri's wildlife. These are apparent through legislative acts to control the taking of wildlife and through changing patterns of land use.

Kate Lord drawing reproduced from **Resources for the Future** leaflet.

When the white man first arrived in what is now Missouri he found an area quite divergent in basic characteristics. In the north and west were the rolling to flat prairie lands. Timbered areas were found along the main rivers and some of the larger tributary streams, and the Ozark region was practically unbroken forest. The northwestern prairie region contained what is considered the most fertile soils of the state—wind blown from the Missouri River. They differed primarily from the northeastern glaciated soils in their basic newness so that plant nutrients had not had opportunity to leach out through thousands of years of rain as had occurred in the northeastern section. The river bottom lands, particularly on such streams as the Mississippi and the Missouri, contained numerous swamp and marsh areas, all of which were havens for wildlife. The advance of time was to see virtually all of these drained, to be replaced with domestic crops of corn, wheat, and soybeans. So too the prairies were to be plowed, the timbered areas were to be cut and burned, and as the face of Missouri thus changed, so would the wildlife population.

HISTORY

The story of wildlife in Missouri begins to unfold about the year 1700, when the French first started the fur trade along the Mississippi River. The trade in furs as a business increased slowly until 1764 when St. Louis was founded, a city which could serve as an adequate base for the trade. The first legislative attempt to control wildlife populations was made in 1816 with

the passage of the first bounty law by the territorial legislature. Three years later an individual act of far greater significance to wildlife occurred. The first prairie area in Saline County was turned under by plow. Thus we reach the time when Missouri achieved statehood and the impact of man on the land and wildlife became greater in magnitude.

It would be well to consider the status or levels of wildlife populations at the time the white man invaded Missouri by way of the major streams and their tributaries. It must be remembered that these were areas of high wildlife abundance. For this reason early settlers were prone to speak of the wildlife mecca that existed in Missouri. But the prairie areas were vast in size and unbroken and the timbered areas consisted of mature, full grown timber with very little brush or understory. These two types of areas covered most of the state and represented habitat which could never support very large numbers of wild animals. Deer and turkey, usually thought of as timberland or forest species, existed in greatest abundance in the fringe area between the prairie and the forested areas as well as along the rivers. Squirrel were plentiful in timbered portions of the state but quail and rabbits, as compared to population levels today, were few.

Since Missouri became a state many legislative acts have been passed affecting wildlife or their by-products, and a brief résumé of those most important may be useful to readers' understanding of wildlife in Missouri. The first fire control act passed in 1824 was described as "an act to prevent the damages which may happen by the firing of woods, marshes, and prairies." This act, like most early acts, had no enforcement agency to see that its dictates were carried out. The first bounty act passed by the State Legislature became effective in 1837 and offered a bounty of $2.00 for each wolf scalp. In the early 1840's the state paid an average of $5,000 per year on wolf scalps. This was a considerable sum for that time.

Missouri's first game law, which applied to St. Louis County only, was passed in 1851 and established closed seasons on deer, prairie chicken, turkeys, grouse, quail, and woodcock. This law also made it illegal to sell game during the closed periods. The first statewide game law was passed in 1874 and established a statewide closed season on grouse, quail, turkeys, prairie chicken, woodcock, doves, meadow larks, and deer, and also forbid the sale of game animals during the closed season regardless of the fact that they might have been taken legally outside of the state. It was later upheld in court through the view "that the state had as much right to preserve its game as it had to preserve the health of its citizens."

The first state game and fish warden was provided for in 1895. In 1905 the first license fees were charged for hunting. In six months, at $1.00 each, 47,746 permits were purchased. This same act also replaced a ban against non-resident hunters with a discriminatory hunting fee of $15.00, and also vested the ownership of game in the state, a view which has been upheld ever since.

From this time on, annual changes in the game laws were common, mostly in a haphazard manner which followed the path of political expediency. The most important succeeding act occurred in 1936 when, by constitutional amendment, a bi-partisan commission was established and the powers to regulate wildlife and forests passed from the Legislature to this commission. This form of control over Missouri's wildlife resources is still in effect, with rules and regulations being based upon biological and administrative needs rather than political demands.

Historically, laws are clear cut and un-

derstandable compared to the factors that influenced habitats through changing land use; these are more difficult to analyze and often quite subtle. Since Missouri's beginning as a state these changes have been constantly occurring, with some being beneficial to wildlife populations and some detrimental. Oftentimes the measure of this change in land use is reflected in the wildlife populations themselves. For example, although wildlife had been traditionally sold in Missouri, quail and rabbits did not appear on the market lists until about 1870, with quail selling for $1.00 per dozen. Four years later, due to increased abundance, quail were selling for only $0.75 per dozen.

The land use practices which brought quail populations from scarcity are clear in the pages of history. By the late 1830's plowing of the prairie regions was well under way.

As far as can be determined, the first Osage orange hedges were planted in Greene County in 1844. From here, plantings followed the plow throughout the prairie regions of the state. Osage orange was grown as a living fence to keep grazing cattle out of grain fields. Since oxen first and later horses were used for plowing nearly all fields were comparatively small. As a result quail, which subsists primarily in field borders, increased proportionately to the amount of borders. It is probable that quail reached peak numbers in the latter part of the 19th century. Numbers then remained fairly constant until the day of mechanized farming. Since this made farming of large fields practical, field borders and hedge fences began to disappear and as they were reduced, so were the quail.

Remarks with regard to quail serve as an example of what has happened to game populations through changing land use patterns in Missouri; these changing patterns have also affected other wildlife species. Continued drainage of swamps and marsh areas, not only in Missouri but elsewhere on the North American continent, has created great reductions in overall waterfowl population. As deer and turkey were forced into the Ozark timber regions they too continued to decline until a legal open season could no longer be allowed. A game survey made in 1935 estimated that a maximum of 2,240 deer were left in only 28 counties. At the same time turkey numbers were down to 3,585 birds in only 45 counties. Prairie chicken levels had been reduced to approximately 5,100 while some species, such as the elk and buffalo, had long since disappeared from the Missouri scene. Thus we entered a new era which might properly be called "modern game management."

GAME POPULATIONS TODAY

The functions of modern day game management in Missouri are summarized in a statement of the fundamental principles upon which the Conservation Commission operates. These are:

1. All game is the product of land and water.
2. The game management program is one part of a larger program designed to increase productivity and value of all the lands and waters of Missouri.
3. The hope of successful game management depends on developing and managing natural environment—food, cover, and water.
4. Most of the game must be produced on privately owned lands. This calls for cooperation between landowners and land users, for the advantage of both.
5. The hope of game restoration and wise use lies in the three-way cooperation of the state, the landowner, and the public, based on adequate information and mutual understanding.
6. Fact-finding is the basis of successful game management, and successful fact-finding depends on using qualified and carefully selected personnel.

Since formation of the Missouri Conservation Commission in 1936, game management practices in the state have followed these principles.

Today there are 43 huntable species of wildlife (including 24 species of waterfowl and 12 species of furbearers) available to the Missouri hunter. These species, of course, differ in abundance but the value in applying game management principles will be evidenced in the following discussions of each species.

WHITETAIL DEER

Of all the game animals found in this state today, the deer herd has shown the most spectacular growth. Three factors have combined to bring this about; adequate protection, control of forest fires, and a trapping and transplanting program which has distributed the herd over the entire state. Good management has produced a growth from an estimated 2,240 deer in 28 counties in 1935 to a present day annual kill of over 16,000 animals from all 114 counties. The sighting of a deer within the city limits of St. Louis or Kansas City, although newsworthy, is no longer occasion for great excitement.

The first step in the Commission's attempt to restore deer was the establishment of a year 'round closed season in 1938. This was immediately followed by the trapping and transplanting program, which was finally terminated in 1957 after 2,345 wild-trapped deer had been released on 70 sites in 54 counties.

Recovery of the deer herd was rapid, resulting in re-opening the season in 1944 on bucks only; to any deer in 1951; and finally to an open season in all counties in 1959. Although some very localized areas have shown signs of having too many deer, all available data point to a continuing increase of state-wide deer numbers for some years to come. The table clearly shows the steady increase in deer numbers and hunters.

Deer Hunters: Gun Seasons

Year	Counties Open	Hunters	Deer Kill
		Thousands	
1944	20	8	*
1945	21	11	*
1946	21	15	*
1947	25	18	1
1948	25	21	1
1949	25	19	1
1950	26	19	2
1951	32	30	5
1952	42	38	7
1953	47	45	8
1954	56	46	9
1955	61	49	8
1956	63	49	8
1957	63	50	10
1958	63	59	14
1959	114	68	16

*Less than one thousand.

QUAIL

The bobwhite quail in Missouri today stands out as the only year 'round resident game bird still present in relatively large numbers. A bird of the farmers' fence rows, brushy draws, and waste areas, his numbers fluctuate with changes in farm practices. Since World War II, quail numbers have declined rather steadily and present farming practices would indicate no reversal.

Quail Harvest

Year	Hunters	Total Kill
	Thousands	
1947	120	2,117
1948	105	1,967
1949	115	2,583
1950	115	2,357
1951	105	1,776
1952	101	1,334
1953	72	898
1954	60	788
1955	60	952
1956	78	1,350
1957	72	1,226
1958	66	1,163

However, as the table shows, the quail is still very prominent in our fields and forests.

One of the Commission's greatest quail problems today is persistent demand, by a seemingly unenlightened public, for stocking pen-reared quail as a means of increasing populations. The average hunter considers stocking as a simple means to produce more "huntable" quail. However, the facts point to only one conclusion: the entire concept of quail stocking as a means of replenishing wild quail is biologically and economically unsound.

The economics of quail stocking, if applied to any business, would soon result in bankruptcy. It is estimated that there are approximately 50,000 purist quail hunters in Missouri. These individuals contribute, in license fees, $150,000 per year to the Commission's operation. If this entire amount were used to produce pen-reared birds there would be (at $1.25 per bird) 120,000 quail liberated from the hatcheries to fields per year. A recovery rate of better than ten per cent is unusual, so the best return to be expected would be 12,000 birds per year. Approximately one quail per four hunters would be added to the annual harvest, at a cost of more than $12.00 per bird. This is a rather insignificant increase in take considering that over one millon birds produced by nature are killed annually.

The advocates of quail stocking counter argue that the important point is not the immediate harvest, but the resultant gain in young produced by released quail. This reasoning has its biological pitfalls. The quail hatcheryman is, obviously, in business for the economic return. He therefore maintains a breeding flock which is selected primarily for egg-laying ability. The result is a bird which, though a good egg layer, generally does not show any desire to set a clutch of eggs until late in the hatching season—usually too late for successful rearing of young under wild conditions. The net result is little or no production. So far no one has devised any means of improving upon nature.

RABBITS

From the standpoint of numbers of both hunters and game, the most important species of wildlife in Missouri is the cottontail rabbit. The latest figures for Missouri show that rabbit hunters comprise approximately 41 per cent of all hunters. More hours of hunting are devoted to pursuing cottontails than for all other species combined. Add to this the fact that more rabbits are harvested than all other game combined and one can see the importance of rabbits to the Missouri gunning public. To round out the picture we need add only one other statistic. Of all rabbits shot in the United States, one out of five is taken within this state.

There is no way to determine the ups and downs of rabbit populations historically, but during modern times rabbit numbers have certainly held their own. As shown in the table, rabbit hunters for the period reported have remained fairly constant but the harvest has doubled.

Rabbit Harvest

Year	Hunters	Total Kill
	Thousands	
1947	136	3,086
1948	129	3,637
1949	110	2,664
1950	123	4,144
1951	117	3,688
1952	105	2,286
1953	100	2,186
1954	111	3,018
1955	104	3,431
1956	138	6,011
1957	144	6,019
1958	136	6,378

Rabbits are unquestionably the easiest game animals to manage from the stand-

point of producing increased population. Being an animal of tremendous reproductive capability and adaptability to a wide variety of habitats makes this possible. Oftentimes farming practices detrimental to one species are highly beneficial to rabbits. For example, a farmer may remove a hedge fence and eliminate quail, but when he piles the downed hedge in a nearby gully for erosion control this automatically gives a tremendous boost to rabbit population.

As a hunter's target, one of the rabbit's claims to fame is that he is found every place: in weedy draws, along fences, at the woods edge, in open pastures, along drainage ditches, in the hill lands, in the bottom lands, in the prairies, and even in your back yard. Adverse winter weather can greatly reduce rabbit numbers but the inherent prolificacy of the species will quickly return to the status of plenty. When the Creator of life made rabbits and said "go forth and replenish the land" there was never a need to repeat the command. There is little question that numberwise the cottontail will continue to be Missouri's most important resident game animal for many years to come.

SQUIRREL

The squirrel, ranking second only to rabbits as a game animal, is the dominant species found in Missouri's timber. It is probably the state's most controversial game species from the standpoint of regulation; a situation fostered by this animal's complicated reproductive cycle. The squirrel season in Missouri has traditionally opened during the early summer. It is generally difficult to "uproot" traditions and this traditional summer opening must be borne in mind in analyzing the situation.

Squirrels, unlike most animals, show two production peaks during the year. The first peak occurs in early to mid-spring and is followed by a period of low productivity. The second peak occurs in mid-summer and is followed by a steady decline in production until the fall cessation of breeding activity. The average squirrel hunter prefers to take young animals about three-fourths grown, while a large segment of hunters objects to hunting during a production period. An early fall opening occurs when first litter animals are full grown while an early summer opening will include the second production period. The regulatory problem is self-evident. At present, in an effort to solve this, the Commission has a split-season. The first period of hunting extends from May 15 to June 15, which allows for the harvest of young of the first litter during the period of low summer production. The season is then closed from June 15 to August 15, when it re-opens to extend to November 30. It is as yet too soon to determine if this type of season provides a satisfactory solution.

Squirrel Harvest

Year	Hunters	Total Kill
	Thousands	
1947	79	1,824
1948	88	2,053
1949	99	2,697
1950	79	1,618
1951	69	1,426
1952	81	1,956
1953	64	1,524
1954	79	2,273
1955	71	2,180
1956	63	1,533
1957	74	2,020
1958	82	2,233

The fluctuation in squirrel numbers shows no relationship to either hunter pressure or harvest. Instead, these fluctuations appear to coincide with variations in production of mast (acorns, nuts, etc.). Data on annual mast production, therefore, are used by Commission biologists to predict year-to-year changes in squirrel numbers. As Missouri's timbered areas have better manage-

ment practices applied and as forest fire control becomes more efficient, there will certainly be no decline in Missouri's squirrel population. It will probably increase.

WATERFOWL

Waterfowl, being migratory and of numerous distinct species, show varied and complex problems not associated with other Missouri wildlife. The drainage of small water areas in Canada is just as important to the Missouri duck hunter as the removal of hedge fences to the quail hunter. The big difference is that only the quail hunter, can see what is happening.

Very few waterfowl are produced in Missouri so it is strictly a "harvest state." As a result, virtually all the Commission's efforts are directed toward improving hunting conditions. Considerable money has been devoted to acquisition and development of waterfowl sites which are managed primary for public hunting. The Commission, at the present time, has six major waterfowl areas in operation with a seventh being developed. It is estimated that approximately one-third of Missouri's waterfowl hunters do their hunting each year on these public areas.

Some hunters question the Commission's program of public waterfowl hunting sites. However, the simple fact is that with these areas the Commission can receive a greater return in the form of harvest to the hunter than with any other form of management expenditure. It should be realized that one such area in Missouri can potentially concentrate waterfowl produced in the entire mid-North American continent. It is feasible to attain a kill of six to ten ducks per huntable acre on such areas and this cannot be achieved for any other species.

Duck Kill

Year	Hunters (Thousands)	Total Kill
1951	65	682
1952	57	315
1953	46	335
1954	49	360
1955	76	374
1956	72	413
1957	77	697
1958	74	418

The greatest problem facing waterfowl is the continued drainage of small water areas in northern United States and Canada. Collectively, these constitute the major production sites of waterfowl which migrate through the mid-continent region. It is paradoxical that the Federal Government pays farmers to remove land from crops, in the battle against farm surpluses, and at the same time pays farmers to drain wet lands for crop production. American tax payers and waterfowl are the losers. With continuation of drainage the future of waterfowl hunting as known today appears dim.

DOVES

The mourning dove is the only migrant game bird of the uplands presently hunted in Missouri in significant numbers. Hunting pressure on doves has increased rapidly with more than twice as many hunters participating in this sport as ten years ago. Surveys show that dove numbers have steadily increased but even so they do not sustain nearly as much hunting pressure as populations could tolerate. Annual production of doves within Missouri unquestionably far exceeds numbers harvested here. Some idea of the dove hunting potential in Missouri can be seen in the table.

The Commission's main work with doves is banding studies designed to determine migrational paths and wintering areas of Missouri produced birds. Prior concensus was that Missouri doves migrated southeastward to winter in the southeastern gulf states. However, after banding over 10,000 birds a different situation was found to

Dove Kill

Year	Hunters	Total Kill
	Thousands	
1947	8	203
1948	9	99
1949	8	95
1950	13	175
1951	9	123
1952	14	195
1953	17	239
1954	14	179
1955	15	248
1956	20	304
1957	17	228
1958	18	252

prevail. Missouri doves migrate southwestward to winter in Texas and northern Mexico. The importance of this finding is that the heaviest gunning pressure on doves occurs in the southeastern states and, therefore, daily bag limits on birds wintering there are lower than for birds wintering west of the Mississippi River. As a result, Missouri dove hunters are currently permitted a larger daily bag than previously. That doves are an important game bird nationwide is attested by the fact that in the United States, more than twice as many are taken annually as all species of waterfowl combined. With doves in such plentiful supply their hunting in Missouri will undoubtedly increase in popularity.

FURBEARERS

Missouri furbearing animals, comprising twelve species, are the only form of Missouri wild animal life still commercialized. However, current traffic in furs is very minor compared to the contribution this once great business made to the early progress of this state. Currently there are less than 3,000 licensed fur trappers in the state.

The most spectacular recovery of any furbearer is the return of the beaver. From near extinction in the mid-thirties, these animals have recovered to where approximately 2,000 pelts were harvested during the last trapping season. The take could have been much higher but is restricted by low prices, averaging today only $3.60 per pelt. The recovery of the beaver was brought about through complete protection coupled with trapping and transplanting to areas of suitable habitat throughout the state.

Raccoon numbers have risen to all time highs in recent years. Many theories have been advanced but no one really knows what led to this spectacular rise in numbers. Wildlife biologists have been studying the 'coon for several years in anticipation of a sudden decline after the fashion of most wild animals which reach such high population levels. To date these studies have resulted only in producing some frustrated biologists who are still watching—and waiting.

The future of the fur trade in Missouri hinges on so many complex factors that little can be said here as to the future. Such things as importation of raw furs from foreign countries, increased production from fur ranches, changing fashions, and production of synthetic furs, all play a part. However, if happenings of the past indicate the future the fur trade, in the not too distant future, will become virtually nonexistent in Missouri.

OTHER WILDLIFE SPECIES

Wild Turkey

The Commission's program of turkey management parallels, in most respects, practices used to increase deer. The exception is that good turkey habitat in Ozark timber does not materialize until after several years of complete forest fire protection. The Commission's first fire protection districts were in the eastern Ozark border and this area at present is the state's most extensive turkey range. Within the

Ozark region, five state managed areas are maintained as turkey production units. From these, turkeys are trapped and transplanted into areas of suitable habitat. Transplant efforts are designed not only to extend the turkey range in the Ozarks but also to re-establish this king of game birds north of the Missouri River. The latter is viewed with optimism with the establishment of a wild turkey flock in Warren County. The Commission's turkey program to date resulted in re-opening a 14 county area to hunting in the spring of 1960—the first turkey season in 24 years.

Prairie Chicken

Somewhat surprisingly, Commission surveys show that Missouri's prairie chicken populations now are approximately equal to turkey. Even so, it is doubtful that Missouri hunters can expect an open season on chickens for many years, and possibly never. Turkey habitat is improving and extending while chicken habitat is barely holding its own and will probably decline. The Commission's chicken management program centers around three sections of state owned native prairie in St. Clair County. Additional small tracts of prairie grassland surrounding this larger area will be acquired as they become available. In any overall area, a certain percentage of the land must be in perennial grass for prairie chicken to survive. The purchase of small acreages of grass lands will help achieve this percentage requirement. Although Missouri hunters may never again have opportunity to hunt chickens, the Commission will not allow the prairie chicken to follow the heath hen to extinction.

Ruffed Grouse

Ruffed grouse, like turkey, seem to thrive best in timbered areas which have had 15 to 20 years of complete fire protection. Many areas of Missouri have now reached this stage, but the grouse had already disappeared. At present the Commission is experimentally stocking two areas with wild-trapped grouse from Ohio. This program was initiated in fall 1959, and it is too early to determine whether it will be successful.

Exotics

The stocking of exotics (game birds from foreign lands) has been carried out in the United States for many years. Some have been very succesful, such as the ring-necked pheasant and Hungarian partridge in the north central states and chukar partridge in the arid southwest. Enough pheasants exist in northwest Missouri to permit an open season there, but in general the species tried have not done well in Missouri. The Commission is presently experimenting with four new strains of pheasants and one strain of partridge to determine their adaptability. The first release of pure strain birds is scheduled for early 1961. It will be several years before the success or failure of this and following releases can be determined.

GENERAL

The reader will understand that the foregoing coverage of Missouri's game species is necessarily brief. Many of Missouri's game populations are, at this moment, very low in numbers. However, Commission technicians recognize that this setback, occasioned by extreme weather conditions in spring 1960, is only temporary. Barring other catastrophic conditions, these game species will come back rapidly to repopulate the land.

There are those who would place an economic value upon wildlife resources. I cannot do this. We can measure how many dollars a hunter spends to bag a duck, a rabbit, or a quail, but what does this price tag mean? Does this include the value a duck hunter receives from watching the sun rise over a distant shore; perhaps the

only time during the year he views this spectacle? Does it include the value to a small boy of venturing forth in a still, white, and frozen world in search of rabbits? As modern man leaves his atomic laden world and the stresses of modern living for a day of hunting, what is the true value of the game bagged? What is the value of game which was not bagged? I do not know the answer.

I do know that a man is growing old when he cannot see the future for remembering the past. I have known men of great wealth who, as they grew old, talked not of their wealth or their means of achieving it. Instead, they remembered a family of otter that lived on a bend of the creek that crossed their father's farm; the great flocks of passenger pigeons which landed with limb-shattering force in a nearby forest; a flock of Canada geese which moved on silent wings over their blind to settle among their decoys. What is the true value of wildlife? Of what will our memories consist as we, too, join the legions of men grown old?